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Partner Update

U.S. Department of Energy • Office of Energy Efficiency and Renewable Energy | www.rebuild.org • DOE/EE-0263

March – April 2002

Active Physics Spurs Major School Retrofit

Pursuit of Active Physics, an interactive energy and science curriculum, has sparked development of a major energy retrofit to Wyandotte High School, a historic school in Kansas City, KS.

Since the school district adopted Active Physics in the summer of 2001, training faculty to provide hands-on energy instruction, the curriculum has prompted incorporating energy-conservation measures into planned school renovations. Now, a $6 million renovation of the historic building will include energy-saving techniques area officials learned on a recent trip to Evansville, IN.

"Out of Active Physics came interest in a major energy project for

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INSIDE

The New American Home®: Beauty and Efficiency In One

The New American Home®, the centerpiece display home for the International Builder's Show, sports qualities unlike any other show home.

As the centerpiece display home for the International Builder's Show, held the first week in February, The New American Home sports qualities unlike any other show home. With energy-efficient design a paramount characteristic, the home uses 58 percent less energy for heating and 53 percent less energy for cooling than a comparable home. The home also boasts a 91.1 Home Energy Rating System efficiency level.

Recognizing the home's superior rating, as well as the builder's ingenuity, the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency, presented the builder, John Wieland Homes and Neighborhoods, with the ENERGY STAR® Certificate during a February 7 event at the International Builder's Show.

Mark Ginsberg, DOE Deputy Assistant Secretary for Building Technology, State and Community Programs, explained "The New American Home demonstrates that energy-efficient homes are becoming a mainstream strategy for builders. These homes offer improved quality, enhanced occupant comfort, lower utility bills, higher resale value, and they lower the nation's demand for electricity."

The New American Home is an annual showcase project designed by The New American Home Task Force and co-sponsored by the National Association of Home Builders' National Council of the Housing Industry and Builder Magazine. This year's home was a joint effort of John Wieland Homes and Neighborhoods, an Atlanta-based builder; Southface Energy Institute, a nonprofit environmental building group from Atlanta; and Building America's **Integrated Building and Construction Solutions Consortium (IBACOS)**.

Striving to create an attractive, yet energy-efficient house, John Wieland Homes wanted to establish a level of energy efficiency never before seen in a display home, while keeping construction costs within reason. It was critical that all costs for energy efficiency upgrades be kept within reach of most project budgets. A key element in meeting this goal was planning and designing for performance.

Intricate and detailed strategies for duct design layout, HVAC optimization and air-tightness were developed. The strategies show other builders that heating, cooling and ventilating a large home can be done economically and efficiently, without sacrificing performance or homeowner comfort. The home also features improved windows, an air-tight, well-insulated building envelope and an energy recovery ventilator.

In addition, The New American Home® incorporates improved moisture control and

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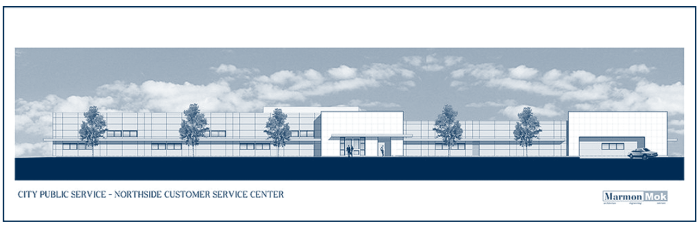
Utility Breaks Ground on 'Showcase' Service Center



An artist's rendering of the new customer service center.

The municipal utility of San Antonio, TX, City Public Service (CPS), recently broke ground on a new energy-efficient customer service center that CPS hopes will influence energy efficiency and sustainable construction in the greater San Antonio region.

The groundbreaking is part of a larger energy-focused effort underway in the greater San Antonio area. Utilities, local governments and other partners have banded together to create the Metropolitan Partnership for Energy (MPE), a new organization committed to energy-efficient and renewable energy projects.

"This new Northside Customer Service Center will be City Public' Service's showcase," Rebuild America Program Representative **Mike Myers** says.

The new CPS customer service center's state-of-the-art technology and visibility in a major San Antonio commercial district will further enhance MPE's goals, as well as help CPS better serve its consumers.

CPS, the second largest municipally owned utility in the country, is a major partner in MPE, formed last year to enhance energy efficiency in the Texas counties in and around San Antonio. The organization includes Bexar County, in which San Antonio is located, Rebuild America partnership **Solar San Antonio**, the City of San Antonio, the VIA Metropolitan Transportation Authority, Greater Bexar County Council of Mayors, the San Antonio Water System and the Alamo Area Council of Governments.

CPS hosted the groundbreaking January 8 and utility executives expect the building to be completed by August 2002. The U.S. Department of Energy and its National

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Active Physics Spurs Major School Retrofit

Wyandotte," Rebuild America Program Representative **Kirk Bond** says. "And the trip to Evansville spurred interest in specific ideas for the school."

While in Indiana, school district officials learned about HVAC techniques pioneered by Rebuild America Business Partner **Veazey Parrott Durkin & Shoulders (VPDS)**, an Evansville architectural and engineering firm.

In the early 1990s, with cash-strapped school districts seeking HVAC upgrades, **Tom Durkin** of VPDS sought to improve upon the 2-pipe HVAC system used by many older schools today. The innovative change to the 2-pipe system uses only one changeover valve, cooler water, state-of-the-art controls, and individual classroom ventilator systems that use fresh outside air. The result is improved indoor air quality, lower utility bills, and affordable heating and air conditioning.

While engineers working on the Wyandotte project liked the idea of the improved 2-pipe system, historic requirements prohibited implementing it in the high school. Instead engineers will use a conventional 4-pipe system that capitalizes on some of the ideas and innovations they learned in Indiana, while maintaining the external structural integrity of the building. For example, the new HVAC system will use lower temperatures for boiler water, existing outside air ventilation systems, and advanced pulse boiler systems that require fewer ignitions and less fuel consumption.

School officials say they took the Indiana system and adapted it for use at Wyandotte. All said, Wyandotte's renovation will enhance the building's overall energy and environmental performance, lower utility bills, preserve its historic character and aesthetics and, most importantly, provide a better learning environment.

Funds for the project will come from a $120 million bond county residents passed in 2000. That bond measure calls for renovations, including heating and air conditioning upgrades or new installation, to all 57 schools in the district. Although the use of a 4-pipe system at Wyandotte High School will result in a higher capital cost to the project, the operational, maintenance and energy savings to the school district will pay for the costs in less than three years.

Wyandotte High School was built in 1937 and is world renowned for its architecture. Its name derives from the Wyandot Native American Tribe that settled in the region over 100 years ago. Built by the Works Progress Administration after a fire destroyed the old school, it is a registered historic building that contains 296,000 square feet.

The school district will begin its renovation and energy project in the fall of 2002.

For more information, contact Rebuild America Program Representative Kirk Bond at kirk.bond@pnl.gov.

ENERGY STAR® Says 'Make a Change'

Money Isn't All You're Saving

Rebuild America Strategic Partner **ENERGY STAR** recently unveiled a new public awareness campaign entitled "Change" to encourage consumers and businesses to invest in energy efficiency. The public service announcements (PSA) are centered on the notion that Americans "can make a change," as U.S Environmental Protection Agency Administrator **Christine Todd Whitman** says, through saving money, protecting the environment and boosting the nation's energy security.

"Change" PSAs have been delivered to major media markets around the country, with print ads appearing in newspapers, magazines and other publications. Radio spots also have been produced in English and Spanish.

The "Change" campaign comes with five energy tips Rebuild America partners can use and share with their communities. They are:

Change a light – Replace your five most frequently used light bulbs with products that have earned the ENERGY STAR.

Heat and cool smartly – Have your system checked annually and install an ENERGY STAR labeled programmable thermostat so that you are not paying to heat or cool your house while you are not at home.

Seal it up – Keep warm air in and big energy bills out by following ENERGY STAR home sealing recommendations for adding insulation to your home, and weatherstripping and caulking around doors and windows.

Put your home to the test – Find out where your home has room for improvement with the ENERGY STAR Home Improvement Toolbox at www.epa.gov/hhiptool.

Look for the ENERGY STAR – When you are purchasing electronics, appliances, office equipment, or even a new home, always look for the ENERGY STAR label of energy efficiency.

ENERGY STAR is a key element of President George Bush's energy strategy, calling on the federal government and all Americans to use energy wisely.

Call for Sponsors and Exhibitors: State Energy Program/Rebuild America Conference

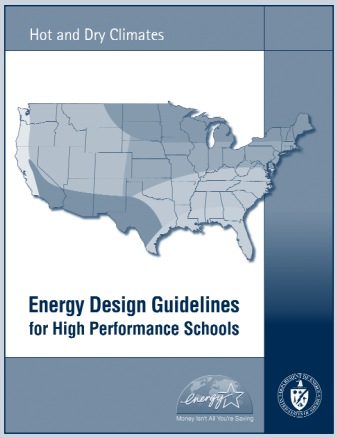
Host an exhibit or help sponsor the 2002 State Energy Program/Rebuild America Conference. This is a great opportunity to raise your visibility or get a product or service noticed. The conference is scheduled for July 29 to August 1 at the Hotel Inter-Continental in New Orleans, LA.

For sponsor information, call 202-466-7868 or email Jennifer May at jmay@pcgpr.com. For conference info, visit www.2002conference.com.

View From DC

By Daniel Sze

February marked a milestone for Rebuild America EnergySmart Schools with the introduction of a tool that we hope will revolutionize the way schools are designed in this country, creating better learning environments for children. On February 8, Assistant Energy Secretary **Dave Garman** unveiled the *Energy Design Guidelines for High Performance Schools: Hot and Dry Climates* at the Council of Educational Facility Planners International Conference in Las Vegas.



The Hot and Dry guidelines, the first in a series of climate-specific guidelines for designing energy smart schools, cover parts of Nevada, California, Arizona, New Mexico and Texas.

The Energy Design Guidelines serve to reinforce President Bush's pledge to "leave no child behind" in the effort to improve America's schools. And by incorporating energy efficiency into school design, we reduce our nation's dependence on foreign oil, another goal of the Administration.

The guidelines are a valuable resource for those who are actively involved in planning, designing, building and equipping K-12 schools. The U.S. Department of Energy (DOE) developed these guidelines under the auspices of the ENERGY STAR® label for buildings and in coordination with the U.S. Department of Education and the U.S. Environmental Protection Agency, in response to requests from school officials and school designers for climate-specific, school design recommendations from DOE.

If we want our children to get a quality education, we need to take a good look at the classrooms where they spend most of their day. Students learn better and teachers work better in healthy, well-lit buildings. Too many of our schools fall far short of this. Too often we find classrooms with uncomfortable temperatures, inadequate lighting, poor air quality and noise problems from mechanical equipment or poor insulation. Poor classroom environments also can

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Fuel Cells: 21st Century Energy

By Chip Larson

When are you buying a new fuel cell for your home or business? It may be sooner than you think!

Even though some barriers to buying fuels cells for your home or business still exist, most have been overcome and the last few are crumbling. Less than three years ago no manufacturer offered residential fuel cells. Today, however, three commercial manufacturers of fuel cells are showing off residential products in field trials and development projects. Plus, many more companies already have commercial units on the market. While these first units are not without problems, they work and will likely be a power source for your home or business in the near future.

But before you rush right out and try to purchase a fuel cell, you might do well to do a bit of homework and read up on the technology.

Three-Part Technology of a Fuel Cell

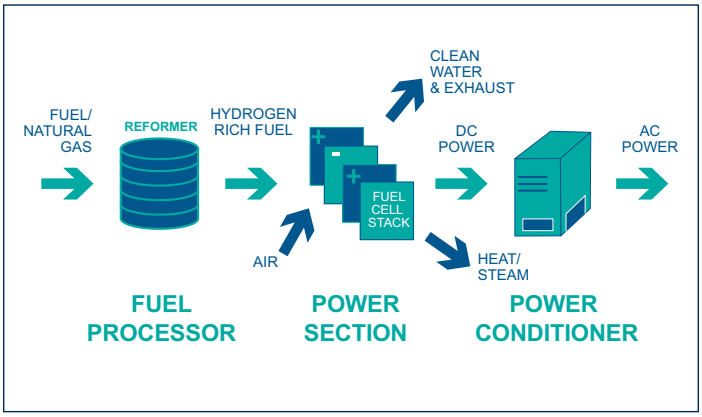
A fuel cell is a highly efficient electrochemical device that produces electricity from hydrogen and oxygen. It's easiest to think of a fuel cell as a battery that doesn't need recharging. Fuel cells are clean, quiet, reliable and efficient.

A typical fuel cell system consists of three components: the fuel processor, the power section and the power conditioner.

The *fuel processor*, also called a hydrogen fuel reformer, converts a readily available hydrocarbon, usually natural gas, into hydrogen gas and cleans up any byproduct. Challenges with fuel processing systems include emission control and scrubbing the hydrogen. Emission control is necessary because the reforming process – removing the hydrogen from a hydrocarbon – can create carbon monoxide and, due to impurities in the natural gas, oxides of nitrogen and sulfur. As fuel cells are quite intolerant of contaminants, the hydrogen sent to the fuel cell must be almost pure. Scrubbing the hydrogen also helps control contaminants.

The *power section*, which is the actual fuel cell, is an assembly or "stack" of fuel cells that provides the desired current and voltage. The challenges in the power section include reliable production of ceramic and membrane plates and reducing, or even eliminating, the need for precious metals. Fuel cell manufacturers have overcome most all production and reliability issues and continue improving on their successes while reducing costs. Unfortunately, high-cost precious metals, like platinum, are still required and perhaps are the biggest single factor holding up low-cost, mass-produced fuel cells. Metal alloys hold promise for reducing the precious metals requirement without compromising efficiency, and material scientists are pursuing other promising leads.

The *power conditioner* – the final section of the fuel cell system – converts the direct current output from the fuel cell into a form suitable for the application, usually alternating current. A power conditioner typically includes a battery bank to respond to instantaneous load changes and an inverter to convert direct current to alternating current. If other energy sources, like wind and photovoltaic, will be combined with the fuel cell, then the power conditioner will include isolation and load management circuitry. There are no significant barriers to the power conditioner component.



Before You Buy

When you think about purchasing your first residential or business fuel cell, there are a few things to consider.

Plan on your new fuel cell having a fuel processor. With a natural gas infrastructure, natural gas is the easiest and most reliable fuel source for fuel cells. The natural gas infrastructure also means a ready-made marketplace for fuel cell manufacturers. If you don't have natural gas, hydrocarbons, such as propane, methanol, kerosene and even gasoline, can be used with differently configured fuel processors.

Because fuel cells are new to the marketplace, plan on addressing several challenging issues. Most significant issues are appropriate siting, operations and maintenance of the power conditioner, disposing of fuel processor byproducts, managing the heat and water from the power section, and electrical connections. Manufacturers, the U.S. Department of Energy and fuel cell consortiums are working aggressively to establish codes and standards that will address all these issues and more.

The purchase cost of a residential fuel cell has fallen, and it will continue to drop. Just a few years ago fuel cells cost about $4,000 per kilowatt, but now cost close to $1,500 per kilowatt. Larger commercial fuel cells are somewhat cheaper. The goal is to get the cost down to $400 per kilowatt. To put the cost in perspective, a home generator you might buy at a local home improvement store costs about $300 per kilowatt.

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Caldwell, Idaho: Leading Idaho in Energy Efficiency

With just 29,000 residents, The **City of Caldwell**, ID, is a model for saving energy, preserving the environment and protecting the integrity of its citizens' tax dollars. Caldwell, located 27 miles from Boise in southwestern Treasure Valley, was the first municipality to join **Rebuild Idaho**.

After learning about Rebuild America from Rebuild Idaho's Sue Seifert and Ken Baker (who is now with the Idaho governor's office), Mayor **Garret Nancolas** formed a partnership with Rebuild Idaho and began a five-year plan to retrofit government buildings in the town. First steps included teaming up with **CMS Viron**, a Rebuild America Business Partner, to perform audits on all local government buildings and identify the best retrofit measures to take. Two years later, the City of Caldwell is nearing its goal. Every government building has been audited, and retrofits now underway will cost $120,000, yet save the town $30,000 annually.

Nancolas is impressed with the project's steady progress, and he's working to share Caldwell's success with the wider Idaho community. Working with Seifert and Baker, Nancolas helped spread the Rebuild Idaho partnership to more of Treasure Valley, a scenic desert home to 45 percent of Idaho's residents. Treasure Valley leadership is working to extend the benefits of performance contracting to all local government buildings, as well as K-12 schools and colleges and universities.

"This is a great example of a small town really affecting a big town rather than the other way around," said Nancolas.

According to the mayor, prior to joining Rebuild America, Idaho had never explored performance contracting, and some state legislation even prohibited its practice. Caldwell and Treasure Valley leaders worked to change that legislation in Idaho and neighboring Washington state. Subsequently, Boise State University and the University of Washington are undergoing energy audits and plan to retrofit accordingly. Audits also are currently underway in many Idaho school districts. What's more, those participating in performance contracting upgrades will reinvest 2 percent of their total energy savings into the Treasure Valley partnership fund. The fund will be used for future upgrades in state government buildings.

"We are stewards of our environment and of residents' tax dollars," Nancolas said. "We want to take what we believe and spread the message."

For more information, contact the Mayor's office at 208-455-3011.

Mayor Garrett Nancolas

Mayor Garrett Nancolas, a native of Caldwell, ID, has been town mayor since January 1998. He learned early in life the meaning of service and has spent countless hours involved in projects to better his community. Before his election as mayor, Nancolas served as president of the Caldwell Service Club Council, eight years as a city councilman and two years as planning and zoning commissioner . Mayor Nancolas also spent a decade in the private sector working in the jewelry and home furnishings industry. In 1997, he returned to a full-time career in public service. Since taking office, Nancolas has lived and worked by a sentiment that complements Rebuild America's mission: "Teamwork – never doubt that a small group of thoughtful, committed people can change the world. Indeed it's the only thing that ever has."

Mayor Nancolas lives in Caldwell with his wife, Pamela, and their children, Caleb and Ashley.

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Fuel Cells: 21st Century Energy

You're Ready to Buy

If you consider yourself an early adopter of technology, you can certainly buy a fuel cell today. A typical residence needs about a 7-kilowatt unit. Plan to spend about $11,000 for the fuel cell and another $2,000 in related cost. But, if you're anxious, wait. A better choice will be the first production units scheduled for 2003.

Not matter your interest now, when you build or purchase your next home, perform a major building remodel or plan a new building, plan for a fuel cell. Fuel cells are here today, and you will want one sooner than you think.

For more information on fuel cell technology, contact Chip Larson with Pacific Northwest National Laboratory at 509-372-4286 or Chip.Larson@pnl.gov.

Or contatct the U.S. Department of Energy's Fuel Cell Power for a Cleaner Future at www.pnl.gov/fuelcells/index.htm.

MIT Developing Efficient, Responsive Homes of the Future

House_n has the technology and capability to respond to an occupant's needs.

The Massachusetts Institute of Technology (MIT) and its partners are developing a model efficient home that is not just a new residence design, but also a model living space that meets and adapts to the owner's lifestyle.

Incorporated in this model home, known as "House_n" – with the n variable representing that there is no single solution – is efficient design in labor, materials, and energy and environmental impact. The concept behind House_n is that a home should be an efficient construction with the technology and capability to respond to the occupant's needs.

Kent Larson, architect and director of Changing Places/House_n Consortium, discussed House_n at a U.S. Department of Energy (DOE) Building Technology, State and Community Programs (BTS) lecture January 9 at the National Building Museum. His remarks are part of a monthly BTS Lecture series.

"The way we work, live and play must change to respond to new technology, demographics and work patterns," Larson said.

House_n is a joint research project led by the MIT Department of Architecture and the Media Laboratory Consortium. It has many sponsors and partners, including Proctor & Gamble, Owens Corning and International Paper Building Materials Group.

According to Larson and the House_n Web site, current residential design is incapable of meeting the demands of an evolution in technology and society. "Most people live in spaces poorly tailored to their needs, and technologies for the home are too often irrelevant gadgets, meeting no fundamental need and developed out of context," the House_n Web site says.

Larson further added that the current state of home construction is far too labor intensive, with estimates placing labor costs at 80 percent and materials cost at 20 percent of total construction cost. Because of this labor intensiveness, homes today are "generic, low-grade, inflexible, high-maintenance" and, generally speaking, "ill-designed."

The people behind House_n want to flip those numbers to expend more on materials such as microchips and other technology that will meet the increasing demand for "environs that reflect people's unique values and needs," Larson explained.

The technology behind House_n is "an integrated 'chassis' that can be rapidly and precisely installed with minimal field labor." Its design also allows for easy installation of necessary wires and other components to furnish the home. There are House_n research projects in the works for high-performance materials, such as a power generating photovoltaic roofing, and creating a digital network in the house to connect "anything, anywhere, anytime."

Energy and environment wise, House_n forecasts a greater cost for design, engineering, quality materials and new technologies, but, because of its pre-fabricated chassis, less on labor and material waste. This minimizes the environmental "footprint." Plus the future house also will have an energy system designed specifically for that residence with a zero net – that is, the system will "produce energy equal to consumption."

Research into House_n and related building design is ongoing, and the project is developing a series of laboratories where design alternatives will be constructed and physically tested.

For more information on House_n, contact Kent Larson at 617-253-8799 or kll@mit.edu. Information also is available at http://architecture.mit.edu/house_n/.

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The New American Home®: Beauty and Efficiency in One

durability-related improvements recommended by IBACOS. The methods undertaken ensure the entire building assembly will be more durable and long lasting because of this investment, and John Wieland Homes should benefit from reduced warranty and liability claims as a result.

"John Wieland Homes has discovered that education and inspection of systems are key to saving energy without significant upfront expense," explained **Jeff Akin**, West Region president of John Wieland Homes. "Through IBACOS, we have been able to thoroughly understand how our homes perform, making us a better builder."

IBACOS is one of five Building America teams sponsored by the U.S. Department of Energy. For more information, visit www.eren.doe.gov/buildings/building_america/ibacos.shtml. For more information on The New American Home, contact Stacy Hunt at shunt@ibacos.com.

Portable Classrooms: An Efficiency Challenge

More and more portable classrooms are being used to meet the demands of overcrowded schools. They can be built and sited more quickly, and at a lower first cost, than larger site-built schools, making them an attractive alternative to full-fledged building renovations or additions. Yet, despite their appeal, the increased use of portable classrooms creates a challenge – to boost the energy efficiency and educational productivity in these classrooms.

With this in mind, the U.S. Department of Energy's (DOE) EnergySmart Schools is working to transform portable classrooms into affordable, energy-efficient facilities that provide an optimal environment for quality education. DOE EnergySmart Schools has four objectives for portable classrooms:

1. Develop cost-effective specifications for new and existing portable classrooms.
2. Explore new HVAC and building technologies to improve energy efficiency and indoor air quality.
3. Work with industry and schools to evaluate new and existing portable classrooms.
4. Monitor and test performance of new and existing portable classrooms.

The DOE's **Building America Industrialized Housing Program** (BAIHP) and Florida Solar Energy Center (FSEC), on behalf of the **National Association of State Energy Offices** (NASEO), have been conducting research throughout the country on the energy efficiency of portable classrooms.

BAIHP already has conducted studies of portable classrooms in Washington, Idaho and Oregon, where portable classrooms total close to 6,000. And results from FSEC's research can be found online. *Preliminary Evaluation of Energy Efficiency Improvements to Modular Classrooms* is available at www.fsec.ucf.edu/%7Ebdac/pubs/cr1272/. *Evaluation of Energy Efficiency Improvements to Portable Classrooms in Florida* is located at www.fsec.ucf.edu/~bdac/pubs/CR1133/CR1133.htm.

All in all, preliminary findings emphasize four components:

Building Envelope – Fan de-pressurization tests indicate envelope leakage can result in uncontrolled airflow from the classroom to the vented attic. Marriage line gaskets, which join two sections of a building, taped ceiling drywall or unvented structurally insulated panel systems may reduce uncontrolled leakage, save energy and improve HVAC performance. Improved insulation and windows also are important.

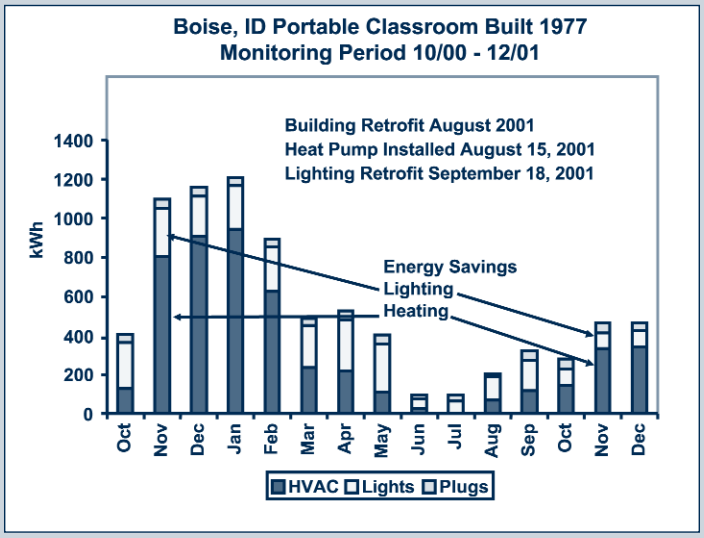
HVAC System – A critical component to efficient and healthy operation of the classroom is routine HVAC commissioning. This includes measuring outside airflow rates for adequate ventilation and testing controls to insure correct operation.

HVAC Controls – HVAC occupancy sensors are recommended for automated system regulation during weekends and holidays. Monitoring heat recovery ventilators and economizers indicate improved indoor air quality and reduced energy use.

This portable classroom in Boise, ID, built in 1972, underwent energy-efficient retrofits, including installation of U.35 windows, electronic ballast T-8 fluorescent lighting, and a new heat recovery ventilation system/heat pump.

Lighting – Natural day lighting and T-8 electronic ballast lighting are preferred.

For more information on this article, contact Mike McSorley with the Washington State University Energy Program at mcsorleym@energy.wsu.edu. For more information on the Building America Industrialized Housing Program, contact George James with DOE at george.james@hq.doe.gov.

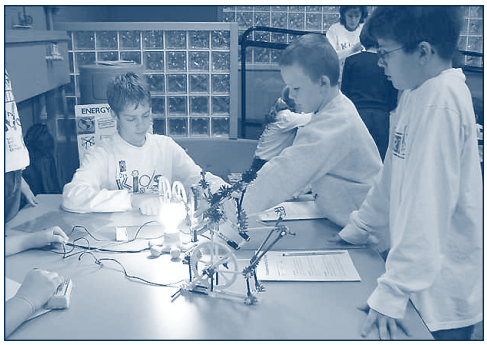


Graph 1: Retrofit Efforts Improve Classroom Efficiency in Idaho
A comparison of energy use data between November-December of 2000 (before retrofit) and the same months in 2001 (post retrofit) shows a 46 percent savings.

NEED and EnergySmart Schools: Energizing Curriculum

The **National Energy Education Development Project (NEED)** knows how to make schools energy smart, and they're sharing their knowledge with Rebuild America. As a Strategic Partner of EnergySmart Schools, NEED brings over 20 years of experience, knowledge and material to classrooms throughout the country all the while stressing the importance of teaching children the fundamentals of energy use and conservation.

Initiated in 1980, the NEED Project is a nonprofit organization dedicated to developing and distributing comprehensive, hands-on energy education programs to schools nationwide. Curriculum is created to teach the economic and environmental impacts of energy so students and teachers can make informed decisions in school, at home and in the future.



The NEED Program provides EnergySmart Schools with a wealth of material for the classroom.

The NEED Program provides EnergySmart Schools with a wealth of material for the classroom. This includes objective information about the science of energy contained within teacher-approved, educational materials. NEED-produced activities make teaching energy easy and learning about energy fun through energy-related games, activities and even songs. Among the numerous curriculum materials that NEED provides are:

Today in Energy – An activity book for grades K-4 that explores energy uses, costs and trade-offs.

Energy Conservation Contract – A guide for grades 4-12 that helps students learn about saving energy by encouraging their families to conserve.

Saving Energy at School: Monitoring and Mentoring – Activities that pair upper elementary students with primary students to teach and learn.

Learning and Conserving – Activities in which high school age students use the building as a laboratory to explore energy use and conservation.

The partnership was launched in part because **Blanche Sheinkopf**, Rebuild America EnergySmart Schools coordinator, was familiar with the work of NEED and thought it was a good fit. She contacted **Mary Spruill**, NEED program director, who agreed that a partnership would benefit both organizations. The national partnership allows each group to leverage the strengths of the other to reach students and engage them in curricula across the country.

One focus of the partnership is to help students and teachers better understand the facility and environment in which they work and learn and, in turn, how energy impacts everyday life.

"Kids need to know why they're doing what their doing and why they're studying what they're studying, " says Spruill. "We don't go to school without energy. We don't go to work. We don't even get out of bed without it. "

NEED also is dedicated to bringing teachers up to speed on energy issues, so they understand and feel comfortable teaching the subject matter. Most colleges and universities do not incorporate energy training courses into the education major. NEED conducts training sessions and workshops and creates lesson plan materials for educators to incorporate into their teachings.

NEED and EnergySmart Schools also work directly with the schools to implement energy-efficient improvements. The partners work with state energy offices and build partnerships with schools. This often includes making schools a Rebuild America partnership so that Rebuild America experts can provide assistance with retrofit projects or the use of new fuel technologies.

NEED and EnergySmart Schools are active in every state. Some ongoing projects include:

Kentucky – NEED received a grant from the State Energy Program of Kentucky that provides for energy-efficient workshops and training sessions in six Northern Kentucky counties. NEED plans to extend the benefits of these sessions to the rest of the state later this year.

Illinois – NEED and EnergySmart Schools are hosting a conference in April to train all teachers, facility managers and superintendents from around the state in efficiency practices. Students who have excelled in energy efficiency will facilitate roundtable discussions. Illinois NEED also offers internships, scholarships, Web-based management tools and other resources for schools.

North Carolina – NEED is working to create a statewide energy curriculum for public schools. North Carolina has over 700 educators participating in NEED programs and was recognized with a State Energy Program Award for its progress in energy efficiency.

For more information about NEED and bringing energy efficiency into schools, contact Mary Spruill at mspruill@need.org or visit www.need.org.

Students Win Trip to 2002 Winter Games

Igniting Creative Energy Challenge Honors Innovation

A solar oven made from compact discs, a colorful children's book and a multimedia presentation on ethanol fuel are the winning entries in the Igniting Creative Energy Challenge, an educational competition administered by the **National Energy Foundation**, a Rebuild America Strategic Partner. An educational grant from **Johnson Controls, Inc.**, a Rebuild America Business Partner, and the United States Energy Association funded the Challenge.

The winners – three students and a teacher – traveled in February to the 2002 Winter Games in Salt Lake City. The trip included airfare, lodging, tickets to Olympic events and a medal ceremony, and opportunities to mingle with athletes.

Participants from grades K-12 were challenged to express their ideas on energy conservation and the environment via their choice of media, including science projects, essays, stories, photographs, artwork, video or Web sites. Student winners from elementary, middle and high school divisions were awarded points for creativity, expression and understanding of how to make a difference in the home or community. In addition, the teacher with the greatest number of qualifying student entries won a trip to the Winter Games.

The 11-member judging panel included science, gifted and talented music and math educators, a professional artist, environmental experts and National Energy Foundation staff.

"Overall, the caliber of entries was unbelievably creative," said **Dr. Edward Dalton**, National Energy Foundation president. "We are very gratified that the Challenge motivated so many students to think about their impact on energy and our environment."

For more information, visit www.ignitingcreativeenergy.org.

The Challenge Winners

Elementary Division: Thomas-Jay Burgess, second grader, Weston Elementary School, Imlay City, MI., demonstrated how solar power could supplement other energy sources by cooking a pizza in a solar oven he made from recycled compact discs and tinfoil.

Middle School Division: Amanda Jayne Ownby, eighth grader, Lake Braddock Secondary School, Burke, VA, used computer technology to author a colorful rhyming children's book so kids and their parents can learn about energy conservation.

High School Division: Grant Lewis, sophomore, Delavan High School, Delavan, IL, produced a multimedia presentation on the benefits of ethanol as an alternative fuel.

Teacher Division: Martin Teachworth, science teacher at San Diego's La Jolla High School sponsors an extracurricular environmental club that provided a local elementary school with programs to teach energy conservation, recycling and endangered species awareness. His students submitted 40 qualifying entries to the Igniting Creative Energy Challenge.

Winning entries are posted at www.ignitingcreativeenergy.org.

National Energy Foundation Honored with 2002 Olympics Spirit of the Land Award

As the Olympic Games were coming to a close the **National Energy Foundation (NEF)**, a Rebuild America Strategic Partner, was honored in Park City, UT by the Salt Lake Organizing Committee with the 2002 Olympics Spirit of the Land Award for its work in environmental education. NEF credits Rebuild America and EnergySmart Schools, among other programs such as the Igniting Creative Energy Challenge and the Academy of Energy Education, for helping it earn this recognition.

For more information on the National Energy Foundation, contact Edward A. Dalton, president and CEO, at 801-908-5800 or Edalton@nef1.org.

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Utility Breaks Ground on 'Showcase' Service Center

Renewable Energy Laboratory assisted in developing the project, as did Texas A&M University and the U.S. Department of Housing and Urban Development. Local firm Sun Trapper will provide the rooftop solar water heating system.

This "green," sustainable building will use various environment friendly and energy-efficient design practices. When complete, the 72,000 square foot facility will have energy-efficient systems that include two 100-ton absorption chiller-heater units fueled by natural gas. Several rooftop solar panels will power one smaller HVAC unit. A 2,000 square foot photovoltaic system will convert sunlight directly into electricity for the building's use.

CPS is also renovating the structure with reclaimed and

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Oklahoma College Makes Its Mark

In early February, a leading liberal arts institution in Oklahoma officially entered into an aggressive energy efficiency performance contract to net $3.5 million in facility improvements and annual energy savings of about $300,000.

"This is a significant milestone for education in Oklahoma," **University of Science and Arts of Oklahoma** (USAO) President **John Feaver** said. "We are delighted to provide leadership in this venture."

The University of Science and Arts of Oklahoma (USAO) expeditiously pursued this contract, Rebuild America representatives consider its zeal a model for other partnerships to follow – especially in the college and university market sector. USAO is a Rebuild America partnership.

USAO designed and negotiated a performance contract with **CMS Viron** of Kansas City, MO, a Rebuild America Business Partner, to improve the energy performance of campus buildings. Over the next 10 years, CMS Viron promises the university will net $3.5 million in building improvements, with energy savings of approximately $300,000 annually.

In January, CMS Viron completed a comprehensive energy audit on every building on the campus, identifying several opportunities for increased energy efficiency. A 10-month retrofit/construction phase started immediately after the audit wrapped up. Targeted areas for energy retrofits include replacing the university's chilled water plant, installing a new boiler, efficient lighting and an energy management system. Water conservation retrofits also are part of the plan.

"In some places we have equipment and wiring that is 40 years old, **Tim Stiger** of USAO said. "Technology for heating and cooling has advanced by light years in the past several decades. Saving one-third of our energy costs is a huge step."

An aerial view of the University of Science and Arts of Oklahoma.

The contract aims to shave 31 percent off campus' utility bills, including cutting natural gas consumption by nearly 50 percent. The terms of the contract will reduce the energy cost per square foot of campus space from $1.96 a year to $1.35 a year.

A liberal arts university in Chickasha, OK, USAO is the only public school in the state to make *U.S. News & World Report's* top 100 public colleges list. It also was Oklahoma's first college.

Rebuild America Program Representative **Alan Nagle** salutes USAO for its "insight and initiative," adding that "the future will increasingly resemble institutions such as USAO" – colleges dedicated to teaching, modern facilities and energy efficiency.

For more information on the USAO project, contact Alan Nagle at alan.nagle@ee.doe.gov or Randy Talley at rtalley@usao.edu.

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View From DC

imperil the health of children. Consider that 20 percent of schools have indoor air quality problems and that the incidence of asthma among children has increased to 49 percent since 1982.

We can create learning environments with better lighting, temperature control, air quality, acoustics and improved building shells. The money our schools can save in energy costs through smart, efficient building design can be redirected to pay for pressing needs such as computers, books and higher salaries for teachers.

Dave Garman said it best when he told the audience in Las Vegas that "designing new schools and improving existing ones by following energy-smart, efficient practices is the right choice – economically, environmentally and academically."

Guidelines Availability

The Energy Design Guidelines for High Performance Schools: Hot & Dry Guidelines is available on the Web at energysmartschools.gov. It will be available on CD-ROM too. Place an order with the Energy Efficiency and Renewable Energy Clearinghouse (EREC) at 1-800-363-3732. Hard copies also are available from EREC. **Coming in Spring 2002**: *The National Best Practices Manual for High Performance Schools*, for architects, engineers and project managers responsible for school design or retrofit. **Coming in Summer 2002**: Design guidelines for six other U.S. climate zones: Hot and Humid; Temperate and Humid; Cool and Humid; Cold and Humid; Cool and Dry; and Temperate and Mixed. Preorder now.

Dan Sze is National Program Manager of Rebuild America.

Snap Shot: Mike Myers

Mike Myers

Mike Myers is a Rebuild America program and customer service representative for Texas and beyond.

Vital Statistics

Lives in Austin, TX, with wife, Tracy, along with three daughters, 6-year-old Elana, 4-year-old Sierra and 2-year-old Kinsey Elise.

How long have you been working with Rebuild America?

With Rebuild America in different roles for the past six years.

How did you get into this line of work?

I've been active in energy efficiency, environmental planning, green building and renewable energy activities for decades. Okay, maybe a little less, but definitely a long time. Basically, I got lucky. I've been able to work and get paid for what I studied and enjoy doing.

I have degrees in environmental management/urban studies – a field of study that not too many people understood 20 years ago.

One of my first jobs was with a ranching and oil company. Then, after graduate school, I actually went right to work for the City of San Antonio. I first worked on a project to examine the possibilities of using landfill gas for energy usage, a project funded by the U.S. Department of Energy via Public Technology, Inc. and the Urban Consortium Energy Task Force. I got the job because, for some odd reason I actually knew how landfill gas could be converted to productive use. Next, I worked for the City of New York Mayor's Office on Energy and Telecommunications, which then led to work with the City of Austin. In Austin I managed a wide range of energy-efficient initiatives, including the creation of the nationally acclaimed Green Builder Program.

In 1994, I joined the U.S. Department of Energy in Washington DC in the Energy Efficiency and Renewable Energy's Office of Building Technology, State and Community Programs. In Washington, I was able to work on a national level with builders, non-profit organizations and community leaders on a range of energy-efficient topics. I also worked closely with the U.S. Department of Housing and Urban Development, the U.S. Environmental Protection Agency and various presidential task forces.

I moved back to Austin in 1998 and did some green building consulting. In 2000, I joined Aspen Systems as a national Rebuild America program representative.

What brought you to Washington, DC?

I ran out of cities to work for, so I was asked to come to Washington and work for the U.S. Department of Energy.

In 1992 I attended the United Nations Earth Summit in Rio de Janeiro. The Austin Green Building program had received an award. It was at the Earth Summit that I began to work with other national and international groups on developing local sustainable development policies. Over the years I continued to work closely with Public Technology, Inc., American Public Power Association and other groups on energy-efficient programs and green building practices. I gained valuable experience over the years on how to develop innovative and successful programs like the Austin Green Builder Program.

Coming to Washington was a natural step. I was able to put my local government and field experience to work with Habitat for Humanity and presidential task forces. It was a great experience.

What is most rewarding about your work?

Finding ways to make an idea come to life. I like problem-solving.

What do you like to do in your spare time?

What spare time? I have three girls. The time my wife and I spend with them is the best part of the day.

What is your dream job?

I have the dream job. I only need time to swing the hammer and work on my tan.

What is your dream vacation?

Going back to Costa Rica and maybe Brazil with my wife. My Portuguese is better than my Spanish.

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Utility Breaks Ground on 'Showcase' Service Center

recyclable materials. "We're creating a showcase of energy-saving alternatives for CPS and its customers," Project Manager **Alan Demos** says.

CPS partnered with Rebuild America in February 2001. For years the utility has provided competitively priced energy with conventional fuels, such as coal, nuclear and natural gas. But recently it become one of the largest purchasers of wind power in Texas.

It has taken extraordinary steps by joining MPE. As a contributor of initially one-half of MPE's funding, CPS is proving energy efficiency's importance by taking on an active role as a principal partner in MPE, according to Myers.

For more information, contact Rebuild America Program Representative Mike Myers at mt4myers@aol.com.

Upcoming Events

April

4 **Pacific Northwest's Electrical Industry Expo 2002**
Stadium Exhibition Center, Seattle, WA
Visit www.tsnn.com/events/evitem.cfm?ID=335950.

11 **"Best Practices" Roundtable**
Oak Ridge National Laboratory, Oak Ridge, TN
Contact Doug Avery at davery@lbl.gov.

30-5/1 **The Philadelphia Cooling Workshop**
Hosted by Solutions For Progress
Community College of Philadelphia, Philadelphia, PA
Contact Deborah Wyse at phillycool@solfopro.com.

May

7-9 **Enviro Expo**
World Trade Center Boston, Boston, MA
Contact Russ Ryan at rryan@enviroexpo.com.

20-22 **Rebuild America Mid-Atlantic Regional Peer Exchange**
Crowne Plaza Hotel, Richmond, VA
Visit www.cmpinc.net/peerexchange.

June

2-5 **Energy 2002 Workshop and Exposition**
Wyndham Palm Springs Hotel, Palm Springs, CA
Visit www.energy2002.ee.doe.gov.

6-7 **2002 West Coast Energy Management Congress Conference**
Anaheim Convention Center, Anaheim, CA
Visit www.tsnn.com/events/evitem.cfm?ID=208408.

***Dan Sze** presents **Rich Heinisch** of **Lithonia Lighting, Inc.** with a Certificate of Appreciation for his and Lithonia Lighting's longstanding support and commitment to Rebuild America and the Business Partners. Lithonia hosted the Business Partners National Summit in Atlanta in October, collaborated with Rebuild America on a lighting guide, and has stepped up to the plate on behalf of the program on several occasions.*

New Partnerships

- Akron Metropolitan Housing Authority, OH
- City of North Canton, OH
- Tallahassee Housing Authority, FL
- Cleveland Green Building Coalition, OH
- Northampton County, VA
- Newark Public Schools, NJ
- Brevard Public Schools, FL

NEW! ***Marketing and Communications Rebuild America Help Line 202-466-7868***

To submit news or story ideas, contact:
Maureen O'Brien, 202-466-7391, or email mobrien@pcgpr.com

Check Us Out: www.rebuild.org or 1-800-DOE-3732

Rebuild America
U.S. Dept. of Energy

Rebuild America is a network of partnerships – focused on communities – that save money by saving energy. These voluntary partnerships choose to improve the quality of life in their communities through energy efficiency. Rebuild America supports them with customized assistance backed by technical and business experts and resources.

Published bimonthly by the U.S. Department of Energy to report on Rebuild America activities, *Partner Update* now incorporates news from Building America and High Performance Buildings, energy-efficient initiatives of the Office of Building Technology, State and Community Programs.

Building America
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